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MAINTAINING A VIABLE ENERGY SAVINGS PERFORMANCE CONTRACT

KATHERINE L. WEBER AND MICHAEL ALLEN HUCKEBY

Substantial amounts of information are available on Energy Savings Performance Contract award requirements, measurement, and verification, but we have found very little information on the day-to-day management of a comprehensive program. This article describes our experience over the past three years in maintaining a viable Energy Savings Performance Contract program at Kirtland Air Force Base, summarizes the issues we confronted, and outlines our solutions to those issues.

Energy Savings Performance Contracts (ESPCs) are available through a variety of contracting vehicles. For example, the Department of Energy has Super ESPC contracts available to all federal agencies; the Army and the Air Force both have a series of regional contracts available; and Kirtland Air Force Base (KAFB) awarded its own base-level ESPC contract in October of 1998. This gives us local management and control of our ESPC, which, in turn, provides greater flexibility in approaching problems and finding solutions.

As with many Department of Defense (DoD) installations, KAFB has an infrastructure that is aging and not energy efficient. A substantial amount of energy is used every year to heat, cool, and illuminate installation facilities so that organizations occupying them can perform their mission. Generally, project funds are not available to perform energy upgrades, so KAFB has relied heavily on its ESPC program to provide necessary capital improvements to the base to reduce our energy consumption.

Energy Savings Performance Contracting is a team effort. The primary members of our team are the Energy Savings Contractor (ESCO) project manager, the contract administrator, and the civil engineering ESPC program manager. The ESCO's staff,

the contracting officer, and the civil engineering quality assurance staff are also substantial contributors to the overall success of our program.

ESPC BACKGROUND

The government has mandated various energy reduction goals for itself. The latest mandated goals are contained in Executive Order 13,123, which requires, among other things, all federal agencies to reduce their facilities' energy consumption by 35 percent (on a square footage basis) by 2010 from a 1985 baseline. An ESPC is a contracting vehicle that is intended to allow agencies to move toward this mandated reduction without requiring additional expenditures, specifically capital outlay expenditures.

Consider a facility that consumes, on average, \$1,000 worth of energy (electricity, natural gas, propane, steam, etc.) per month. A contractor proposes an upgrade to the physical plant of the facility that will cut the consumption to \$500 per month. The upgrade costs \$5,000 to install.

Upon approval, the contractor borrows the money and installs the upgrade, then maintains it so that it will continue to perform properly for the life of the contract. The government then pays \$500 per month to the utility providers and \$500 per month to the contractor to pay off the borrowed money, plus interest, plus the maintenance cost. That, in a nutshell, is how ESPC works. The result is generally energy savings rather than cost savings, although cost savings are also attainable in some cases. The advantage for the government is that no outlay of capital funds is required, and the operating cost did not change (a total of \$1,000 per month before and after the installation, with the service cost of the new equipment included), so no additional operations and maintenance (O&M) funds are required (see Figure 1).²

ESPCs Reallocate the Federal Customer's Payments for Energy and Energy-Related Operations & Maintenance Expenses (E+O&M)

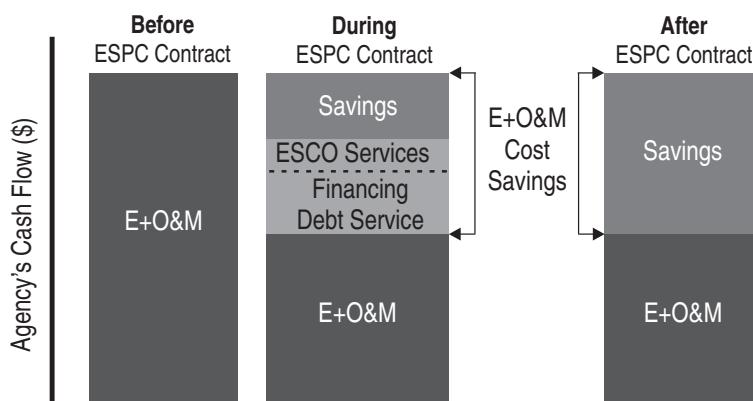


FIGURE 1.
ENERGY SAVINGS PERFORMANCE CONTRACT SAVINGS EXAMPLE

The formal process starts when an ESCO submits a proposal to provide private sector capital investment to construct energy upgrades in government facilities. The proposal includes the specific energy conservation measures (ECMs) proposed, financial schedules detailing how the ECMs will be paid from energy cost savings and for how long, how the energy savings will be audited to prove performance (this is the measurement and verification (M&V) process), and what operations and maintenance services the ESCO will provide to maintain the ECMs over the life of the contract.

The most common ECMs are lighting retrofits and heating, ventilation, and air conditioning (HVAC) upgrades, but can also include cogeneration of electricity, alternative energy sources, building envelope upgrades (insulation, better windows, etc.) and others.

The most common ECMs are lighting retrofits and heating, ventilation, and air conditioning (HVAC) upgrades, but can also include cogeneration of electricity, alternative energy sources, building envelope upgrades (insulation, better windows, etc.) and others. The ESCO, as an expert in energy technology, will (ideally) propose the most cost-effective ECMs based on installation cost and resultant energy savings. However, the proposal must meet certain requirements.

First, the *simple payback* (the installed cost of the ECMs divided by the dollar value of the annual energy savings) must not exceed 10 years, and a proposed \$10,000 upgrade must result in at least \$1,000 energy savings per year. Second, the total contract length cannot exceed 25 years. The difference between the 10-year simple payback and the 25-year overall payback allows the contractor to recover the financing costs and the O&M costs for the ECMs.

Once the government accepts the ESCO's proposal, the ESCO secures the financing and begins the construction phase of the contract. There is no payment to the ESCO during this period, as energy savings do not formally start until construction is completed and accepted.

The formal structure of an ESPC is a basic contract that outlines all the requirements of the program and then each ESCO proposal, if awarded, becomes a task order under that basic contract. Requirements *common* to all task orders are contained in the basic contract (such as the required contents of the proposal); requirements *specific* to a proposal are contained only in that task order.

Authority to award ESPC contracts was just renewed, and now expires in 2006 (National Energy Policy Act. 1986, as amended).

CONTRACTING ISSUES AND LOCAL IMPLEMENTATION DECISIONS

Energy Savings Performance Contracts are unlike other government contracts. The contracts are generally written by the ESCO (the proposal becomes the majority of the contract document once accepted by the government). The term substantially exceeds most other types of contracts—up to 25 years. The ESPC is a task order contract, but it does not work quite like standard task order contracts.

As KAFB has a base-level contract, partnering with the ESCO to make ESPC work is much simpler than if the contracting authority for the contract rested elsewhere. KAFB has also made the following implementation decisions that affect the management of the ESPC program.

- The specific requirements of performance-based service contracting (PBSC) do not apply to ESPC. At the time KAFB's basic contract and first task order were awarded in October, 1998, the available guidance (Smith, 1994) did not specifically address ESPCs. It did, however, exempt utilities contracts from PBSC requirements. The KAFB applied that exemption to ESPC. This decision was validated by the next guidance issuance (Bellacicco, 1999), which specifically exempted ESPCs and grouped them with utilities contracts. Subsequent guidance revision (Bellacicco, 2004) has removed the list of PBSC exemptions. However, KAFB continues with the award decision to exempt.
- Quality customer service is a necessary part of the services that the ESCO provides. The performance basis of ESPC is energy savings, and virtually all the available guidance emphasizes that part of the performance evaluation of the ESCO. Since the Air Force preference is for the ESCO to maintain the installed ECMs for the life of the contract (Cook, 2002), the responsiveness of the ESCO to maintenance and service issues has a substantial impact on base customers. The KAFB surveils and evaluates ESCO performance not only on energy savings but on customer satisfaction, quickness of response to trouble calls, and quickness of repair of trouble calls.
- In place of contract discrepancy reports (CDRs)—the typical contract enforcement mechanism for a PBSC—the ESCO, the ESPC Program Manager, and the contract specialist meet with users to discuss issues regarding unsatisfactory service. This partnering approach to problem solving has worked very well for both the government and the ESCO.

- Since there is no formal Quality Assurance Surveillance Plan (QASP), the government has developed its own surveillance techniques and standards. These include: building surveys to ensure general user satisfaction with comfort heating/cooling and lighting levels; installing data loggers to record temperatures over a period (usually a week); recording temperatures are proper during occupied hours, but that comfort heating/cooling is being shut down during non-occupied hours; telephone follow-up of a percentage of service trouble calls to evaluate customer satisfaction with the contractor's response, timeliness, quality of repair, and attitude; and response to customer complaints. At the ESCO's request, results are provided to the ESCO for its own internal evaluation of performance.
- All government costs associated with ESPC must be paid for by the program—in other words, by the generated energy savings. The KAFB has required its ESCO to provide guaranteed energy savings sufficient not only to cover the contract cost, but also to cover the government's management and oversight costs. The KAFB's Manpower office evaluated the contract size and determined that the appropriate level of oversight was three Quality Assurance Personnel (QAP). Based on the initial estimate of the costs of those three positions, the ESCO provides almost \$200,000 per year of energy savings beyond the contract payment to cover those positions. In addition, the ESCO provides a vehicle for government use in surveillance and managing the contract.

Since there is no formal quality assurance surveillance plan (QASP), the government has developed its own surveillance techniques and standards.

These funds could have been used to pay for additional ECM installation. However, KAFB made the determination that having appropriate management and oversight of the ESCO was more important. Having three QAP permanently assigned to oversee this contract has proven to be advantageous for both the government in ensuring the best possible service, and to the ESCO in having government personnel constantly available to work contract and service issues as they arise, plus providing any other assistance the ESCO requires to keep operations running smoothly.

- The ESCO must have a permanent presence on KAFB. As KAFB's ESPC program has grown to five task orders covering over 200 facilities, having the ESCO come from off base to perform its work is not practical. This has become even more crucial since 9/11, as the additional security restrictions have made gaining access

to the base more time-consuming. The ESCO agreed completely with this decision. The KAFB negotiated with the ESCO to allow the ESCO to put a trailer on base. Base leadership has subsequently pushed an initiative to remove all trailers from the base. Upon renegotiation, the government agreed to provide space and utilities in a government facility in the civil engineering compound—with the ESCO providing (at its own expense) telephone, computer access, and any other ancillary requirements. Although those costs are not directly recovered, the government determined that providing this space was in its best interest. Having the ESCO's office close by has integrated the ESCO into the civil engineering team at KAFB, and makes the daily interactions necessary for partnering possible.

- To make HVAC service as seamless as possible, the ESCO shall be responsible not only for HVAC upgrades it installs, but all of the existing HVAC equipment and controls in a facility. This is primarily an advantage to the government, resulting in better customer service (a single point of contact for HVAC maintenance and repair) and also a flat-rate maintenance cost for those facilities for the life of the contract. Any failed piece of HVAC equipment is the ESCO's responsibility to replace at no additional cost to the government (KAFB maintains responsibility for its piping systems, ductwork systems, and electrical systems). The ESCO (based on its building survey prior to proposal submission) has evaluated both the extent and condition of the existing HVAC equipment it will have to maintain, has factored that cost into the service portion of the proposal, and has validated that the proposal is still economically viable based on that service cost.
- The 25-year time limit is not as simple as it might seem. In a typical task order contract, task orders can be issued up to the last day of the basic contract, and the task order performance period can extend beyond the expiration of the basic contract. However, the Air Force Civil Engineer Support Agency has issued an opinion that task orders issued under the Air Force regional ESPCs must expire when the basic contract expires—25 years from date of award, per the statute. In addition, the contracting officer has determined that the construction period also counts against the 25-year limit, further reducing the length of time available for payback. The KAFB's two large task orders each had construction periods of more than a year. Taking that and the original award date into consideration, any task order KAFB would award now would have only 18 years of payback time available. This greatly reduces the range of ECMs that have economic viability.

LONG-TERM FLEXIBILITY AND VIABILITY

The ESPC concept makes an assumption that is not accurate—that facilities remain static for the term of the contract. With mission requirements constantly changing, requiring facilities to remain unchanged for 25 years is just not a tenable proposition. The following are the issues that have arisen affecting the ESPC program, and the implemented solutions that keep the program flexible and viable:

- Demolition of facilities. Due to changing mission requirements, there may be a requirement to demolish a facility in which the ESCO has performed work and maintains. It is not acceptable to either keep a facility from being demolished or to require a buyout of an entire task order due to a single facility demolition. But, appropriate contractual adjustments must be made, as the installed equipment still belongs to the ESCO.

The KAFB has negotiated with its ESCO the ability to buy out single facilities from task orders. One of the financial schedules the ESCO is required to provide shows the buyout cost for each facility for each performance month of the contract. Thus, when the government determines to demolish a facility, the buyout cost is known and pre-negotiated based on the projected date, and the buyout cost can be added to the overall demolition cost of the facility. When the demolition buyout prepayment is made, the total term of the task order is reduced (think of making extra payments on your home mortgage—the payment does not go down, but the term is reduced). Since part of the monthly payment to the ESCO is for service, that portion (also provided on a building-by-building financial schedule) is saved every month after the buyout.

The requirement to modify a facility is far more common than demolition.

Since the demolition is not the fault of the ESCO, the ESCO is allowed to continue to claim credit for the energy savings its work produced in the facility. The ESCO also turns over ownership of any equipment installed under the task order in the facility to the government at the time of the buyout, and the government can salvage or discard at its preference. The ESCO provides DD Form 1354, *Transfer and Acceptance of Military Real Property*, for all property turned over to the government. To date, KAFB has bought out three facilities from its ESPC.

- Government changes to facilities. The requirement to modify a facility is far more common than demolition. When facilities are changed and the changes impact what the ESCO has to maintain, there must be some adjustment. Since the government wants to maintain a single maintenance contractor for the facility, it makes the most sense to have the ESCO be responsible.

The first solution to this problem was to add funding to the contract to cover the change in maintenance costs. The contracting office made the determination that this was not an acceptable solution and that KAFB could not add non-energy-related funds to ESPC. The KAFB's final solution was to award a small service

contract to the ESCO on a sole source basis for maintenance of changed requirements. These contracts, which are called Companion Service Contracts (CSC), have certain specific features that make them unique. First, they are tied to ESPC. The ESCO cannot use non-performance on the CSC as an excuse for not meeting energy savings requirements on ESPC. The CSC lists the specific items of equipment that are covered (down to make, model, and serial number, so there is no confusion about what the ESPC covers). The CSC allows KAFB to use the ESCO as an installer for HVAC equipment as well, which gives incentive to the ESCO to ensure the installation is done in the best possible manner to minimize maintenance problems.

The ESCO cannot use non-performance on the CSC as an excuse for not meeting energy savings requirements on ESPC.

- When changes are made that only add equipment, all the new equipment falls under the CSC. When equipment that was covered under ESPC is removed, the government and the ESCO negotiate what can be covered of the new equipment under ESPC to maintain the same service level for which the ESCO is being paid. The remainder is covered by the CSC. This is advantageous to both the government and the ESCO. The government maximizes the advantage of the flat-rate service ESPC provides, and the ESCO gets newer equipment to maintain.

This item is probably the most important issue affecting the viability of ESPC. Without this, KAFB would be subject to having multiple contractors responsible for HVAC in the same facility, leading to a customer service nightmare (when customers call the customer service desk, they generally know only that they are too hot or too cold, not which piece of equipment has failed, and therefore which contractor should be dispatched). Or the ESCO could have work done by other contractors, directly impacting the energy savings in a facility.

- Changed contract conditions. Just as the facilities on KAFB will not remain static for 25 years, neither will the conditions that the ESCO operates under. Changes are just starting to work their way through the system to mandated implementation, and KAFB is grappling with how best to implement those contractually. The KAFB has been unable to find a *good* solution, and so has opted for the *least bad* solution. With the approval of the contracting officer, KAFB has added non-energy funds to ESPC to cover the contractor's increased operational costs. No other implementation decision appears reasonable, other than ignoring it and forcing the ESCO to come in with a claim on a periodic basis. The KAFB cannot use the CSC to

pay for requirements under ESPC, and the claims process is counter to the spirit and intent of partnering.

To keep these costs separately accountable, KAFB is adding the requirements and funding to the basic contract, which up until now was unfunded (the funds were added to each task order on a fiscal year basis). Adding the requirements to the basic contract document applies them to work under all task orders, which saves having to modify each task order.

COORDINATION WITH OTHER CIVIL ENGINEERING SERVICE PROVIDERS

At the time of KAFB's ESPC award, the civil engineering component was still government-operated. The first task order involved only one facility on KAFB. Keeping clear the lines of responsibility between the government shops and the ESCO was simple since there was not much to remember.

With the ESCO being such a integral part of the service that civil engineering provides to KAFB, proper interaction and responsibility division between the contractors should ideally be spelled out in both contracts.

As the ESPC program has grown, KAFB has contracted out its civil engineering functions to a civil engineering services contractor (CESCO). Task Order 2 (covering 53 facilities) was awarded just prior to the CESCO award, and Task Order 3 (covering 84 facilities, with HVAC a component in 62 facilities) was awarded 16 months after the CESCO award. The statement of work (SOW) for the CESCO contract was written prior to the award of Task Order 2, so there was no knowledge of the coordination issues that must be solved for the two contractors to work in tandem rather than at cross-purposes (if the government shops were still operating, the same coordination would have to be accomplished). The SOW is silent on any requirements for the CESCO to work with the ESCO other than the generic contractor cooperation clause (Air Force Materiel Command, 1997).

With the ESCO being such an integral part of the service that civil engineering provides to KAFB, proper interaction and responsibility division between the contractors should ideally be spelled out in both contracts. This has not been accomplished as of yet, although the contractors have agreed to a standard operating procedure

concerning interaction between the contractors that covers many of these issues. This document will be the starting point for rewriting portions of each contract.

SUMMARY

The ESPC program is a study in the law of unintended consequences. Many of the consequences of implementing an aggressive ESPC program have not made themselves known until substantially after a task order is awarded. Dealing with these consequences in a creative and positive way is vital to the continuing viability of an ESPC program.

*The ESPC program is a study in the
law of unintended consequences.*

An ESPC is an excellent tool for use in reducing energy consumption when project funds are not available. The issues presented here are not intended to argue against implementation of ESPC, but rather to provide the framework that has worked for KAFB to manage and maintain its ESPC program.

The top priorities of KAFB's ESPC program are:

- Active government oversight and management. The KAFB's ESCO has welcomed this oversight. Having management done as an afterthought or an additional duty as assigned (which is typically ignored) is a recipe for trouble. Active management ensures issues are identified and resolved in an orderly manner (preferably when there is time to ascertain and implement a reasonable solution, rather than in crisis management mode). Evaluating the ESCO's service and repair performance is as essential as evaluating the energy savings performance.
- Allowance for changed conditions. Having a partnered process in place to handle the inevitable changes that will happen over the course of a long-term contract, both in the facilities and in the operating conditions, is invaluable and greatly reduces the stress and time required to make the necessary adjustments, both contractually and operationally, that such changes require.
- Integrate the ESCO into the team. At KAFB, civil engineering is a team made of government and contractor personnel. If any part of that team looks bad, the whole team looks bad. The ESCO must be an integral part of that team, and its presence should appear seamless to the customer.



Katherine L. Weber is a contract specialist for the Contracting Squadron at Kirtland Air Force Base, Albuquerque, New Mexico. The 377th Contracting Squadron at Kirtland provides contracting support and business advice to the 377th Air Base Wing and approximately 200 associate units. She received her bachelor's degree in business from the College of Santa Fe and a master's degree in business from Webster University. She currently resides in Albuquerque, New Mexico with her husband Michael, two sons, Charles 25, Paul 9, and daughter Melissa 17.

(E-mail address: Katherine.Weber@kirtland.af.mil)



Michael Allen Huckeby is the Energy Savings Performance Contract (ESPC) program manager for the 377th Civil Engineer Division, 377th Mission Support Group, 377th Air Base Wing, Kirtland Air Force Base, Albuquerque, New Mexico. The 377th Civil Engineer Division provides facility engineering, operations and maintenance support to the 377th Air Base Wing and its associates. Huckeby graduated from the University of Arizona with a bachelor's degree in mechanical engineering in 1995.

(E-mail address: Michael.Huckeby@kirtland.af.mil)

AUTHOR BIOGRAPHIES

ENDNOTES

1. Executive Order 13,123 retrieved from http://www.archives.gov/federal_register/executive_orders/1999.html
2. See Figure 1 from the Department of Energy's Federal Energy Management Program Web site at www.eere.energy.gov/femp/financing/superespccfm

REFERENCES

Air Force Materiel Command. (1997). Enabling clause between prime contractors and service contractors (Air Force Materiel Command Federal Acquisition Regulation Supplement [AFMCFARS PART 5352.215-9008]. Wright-Patterson AFB, OH: Author.

Bellacicco, B. (1999). Performance-based service contracts (PBSC). Secretary of the Air Force (AFI 63-124). Washington, DC: United States Air Force.

Cook, M. J. (2002). Guidance for energy savings performance contracts (ESPC). Engineering Technical Letter (ETL) 02-5. Tyndall AFB, FL: Air Force Civil Engineering Support Agency.

Energy Savings Performance Contracts, 66 Fed. Reg. 65,352 (December 18, 2001) 48 C.F.R. 23.204 (Federal Acquisition Regulation).

Energy Savings Performance Contracts, 68 Fed. Reg. 43,858 (July 24, 2003) 48 C.F.R. 23.204 (Federal Acquisition Regulation).

Greening the Government through Efficient Energy Management, 64 Fed. Reg. 30,851 (June 8, 1999), Executive Order 13,123.

National Energy Conservation Policy Act. (1986). Pub. L. No. 95-619, 42 U.S.C. §8287 et. seq. as amended.

Smith, S. G. (1994). Service contracts. Air Force Manual (AFM 64-108). Washington, DC: United States Air Force.

Subpart B-Methods and Procedures for Energy Savings Performance Contracting, 60 Fed. Reg. 18,334 (April 10, 1995) (to be codified at 10 C.F.R. 436.30).